SOIL conservation

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SOIL conservation

June 1971, Vol. 36, No. 11

This month SOIL CONSERVATION takes a look at pollution and its control. SCS Administrator Grant's message outlines some steps that SCS and conservation districts are taking in pollution abatement. The lead article tells about several Louisiana dairymen who have installed animal-waste disposal lagoons. Other articles: Pennsylvania teenagers hauling garbage and cleaning out ugly streams; Colorado mine operators making strip-mined areas beautiful again; and in Virginia, an entire county working to halt deterioration of the environment.

COVER: Sunshine and sunflowers—so much a part of the natural environment when pollution is not around. The Sangre de Cristo mountain range (Colorado) in the background.

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hello, lagoon

One hundred and fifty head of cattle create a lot of waste. And Charlie McDaniel of Wilmer, La., remembers well the problem of disposing of that waste.

McDaniel eliminated this problem by installing animal-waste lagoons. Not only has he cut the cost of keeping his 150 head of cattle, but also he doesn't have to worry about unsanitary conditions in his milking parlor and pollutants in his livestock pond and in nearby streams.

McDaniel is one of about 35 dairymen in St. Helena and Tangipahoa Parishes who have animal-waste lagoons completed or under construction.

James Sumrall, from near Kentwood, was the first in Tangipahoa Parish to finish his lagoons, and he was among the first in the state. Sumrall knows the importance of keeping pollutants out of streams, and he's pleased about cutting cleanup costs by about 80 percent. "Before the lagoons," he said, "hired hands picked up the waste with shovels; now I clean up just with water." Savings in cleanup labor and

goodbye, pollution

chemicals for insect control will amount to about $1,200 the first year, claims Sumrall.

Guidelines and design for lagoon waste-disposal systems were developed jointly by the Milk Division of the Louisiana State Board of Health, Louisiana Cooperative Extension Service, Agricultural Stabilization and Conservation Service, and Soil Conservation Service.

In a lagoon waste-disposal system, waste material is broken down in two lagoons or pits by two types of microbes—anaerobic and aerobic bacteria. The breakdown is similar to biological activity on waste material in a cesspool. Generally the waste material is removed from the milking parlor and holding lot with

(Below, left) Animal waste is worked into a pipe that carries it to the first of two disposal lagoons. (Below, right) Waste from the holding lot is broken down into gases, minerals, and sludge by anaerobic bacteria in this lagoon.

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a water hose. It is forced into an entrance pipe at the lowest point of the holding lot, and it empties into the anaerobic bacteria pit. This pit has 8 to 10 feet of water. The oxygen level at this depth is near zero, which is ideal for the growth of anaerobic bacteria. As much as 70 percent of the waste is broken down into gases, minerals, and sludge in this pit.

Liquid effluent from the anaerobic pit flows through a pipe into the aerobic pit. The pipe is at the center of the levee between the two pits. The aerobic pit has 5 feet of water; the oxygen there is sufficient to support the growth of aerobic bacteria. The breakdown process is completed in this pit.

The liquid that runs out of the exit pipe generally is recycled to the land for use by plants.

SCS helps cooperators of the Bogue Chitto-Pearl River Soil and Water Conservation District in designing and laying out their animal-waste systems. The size of the lagoons depends on the amount of raw waste going into them. The cost of the lagoons, including excavation, metal or plastic piping, fencing, and sodding of levees, ranges from $600 to $1,000.—MAX BAER, *district conservationist, SCS, Amite, La.* ♦

Liquid effluent from the anaerobic pit flows into the aerobic pit for complete breakdown.

junior board puts down pollution

By Francis Licsko
District conservationist, SCS
Greensburg, Pa.

The energies of seven teenage boys and girls are guiding the activities of the first Junior Board of Directors of the Westmoreland County Soil and Water Conservation District in Pennsylvania. The young directors were chosen from various youth organizations in Westmoreland County to assist the district in its conservation, beautification, and antipollution programs.

Richard Kemerer, the junior board's first chairman, sees this new organization as a means of involving young people in community resource problems. "After all," he says, "polluted water, dirty air, sediment-filled streams, and a countryside strewn with garbage affects us as well as adults. We too can help clean up the environment."

The junior board has pushed four major projects this year, and the results have been good. A campaign to clean up Brush Creek attracted more than 100 youngsters. These young people removed tons of discarded cans, bottles, furniture, automobile parts, and household goods from a 2-mile stretch along the stream.

Getting the public acquainted with the Jacobs Creek Watershed Project was the second project. The junior directors built an exhibit to publicize the watershed project at local fairs. They also contacted landowners in the watershed and encouraged them to become cooperators of the Westmoreland County District.

The third project was a county-wide anti-litter campaign, and the fourth was a program to spruce up the conservation district's boundary signs. "We're not litter-free yet," admits Kemerer, "and we still need some landscaping at some of the sign locations, but we have made progress." Kemerer hastens to add, "we have just started to work."

"There is no doubt that the junior board is off to a good start," says Roy Houston, chairman of the conservation district's Board of Directors. "The junior board was organized less than a year ago, and already it has some solid accomplishments. And these young people are planning a number of activities that fit nicely into our overall conservation program."

The junior board offers young people an opportunity to help improve the environment. Those that serve on the board get firsthand experience in organizing programs, in dealing with people, and in developing leadership. They also get excellent training as future directors of conservation districts.

The *Greensberg Tribune Review* has described the junior directors as "intelligent, capable, and energetic young people who are putting their energies to a useful purpose." ♦

The Junior Board of Directors of the Westmoreland County Soil and Water Conservation District: (seated, left to right) Helen Hart, Greensburg, treasurer; Ken Reed, Derry, vice chairman; Richard Kemerer, Latrobe, chairman; Nancy Stewart, Latrobe, secretary; (standing, left to right) James Meyers, Irwin, associate director; Neil Kinneer, Acme, director; Vincent Brown, Greensburg, director; Rodger Campbell, Derry, associate director; and Richard Hawley, Hunker, director. Missing from the picture are associate directors Susan Greenawalt, West Newton, and Janet Keneny, Export.

A campaign to clean up this creek attracted more than 100 young people.

and on his farm he had some ducks and crawfish

By Billy R. Craft
Biologist, SCS
Minden, La.

Many landowners in Louisiana have crawfish ponds, and many have duck ponds. Kenneth Prudhomme has a combination crawfish-duck pond—a unique dual usage.

Prudhomme is a supervisor of the Lower West River Soil and Water Conservation District in Natchitoches Parish, La. He had 12 acres of low, wet, marginal farmland surrounded by large live oaks in his cattle-cotton operation and asked for SCS help in planning the area for wildlife. The result was a combination crawfish-duck pond.

By installing a flashboard riser as a water-control structure and two culverts, Prudhomme was able to pump water from nearby Cane River. The water flows through road ditches to the pond. Prudhomme says that pumping costs are low because the same pump used to irrigate cotton on his farm is used to flood his pond.

Crawfish occur naturally in small numbers in Natchitoches Parish, so Prudhomme went to Breaux Bridge, La., the crawfish capital of the world, and bought 600 pounds of red swamp crawfish to stock his pond. The crawfish currently being

harvested from Prudhomme's pond are nearly twice the size of those in the original stocking in 1968. The increased size can be attributed to the fertile soils of the Red River bottom land.

Crawfish eat dead and living plant and animal matter, but in most ponds vegetation is their main diet. Prudhomme's pond contains smartweed, water primrose, and wild millet. The millet furnishes food for both crawfish and ducks. The large live oaks along the edge of the pond provide an abundance of acorns for ducks.

The hatching period for crawfish peaks in October, and an abundance of water is a critical requirement at that time because young crawfish are free swimmers and start feeding at an early age. Prudhomme floods his pond about the first week in October to a depth of about 18 inches. This helps the young crawfish as well as the ducks that are migrating to Louisiana at this time.

Mallards and woodducks mainly stop over to rest and feed. Ducks are hunted only in the mornings. This allows them to return unmolested in the afternoon.

Prudhomme drains the pond late in June after most of the ducks have migrated north. Draining the pond at this time serves two purposes. First, it allows the female crawfish to "dig in" for the summer. Second, draining stimulates plant growth; food for the next year is produced during this time.

The Louisiana Department of Agriculture values the present crawfish industry at more than $5 million. Prudhomme allows only his family and friends to use his pond, but he could turn it into a money maker anytime he wants. ♦

(Left) Kenneth Prudhomme examines a wire trap to catch crawfish; he uses cut fish as bait. (Above) This crawfish-duck pond replaced a wet, marginal farm area. A duckblind is in the center background.

erosion controlled on carlot

By Raymond E. Bryant
District conservationist, SCS
Morristown, Tenn.

In spring 1969, Lon F. Price of Morristown, Tenn., moved his automobile dealership to a new location. Along the edge of a newly paved parking lot was a steep bank that had been neglected during construction. The bank began to erode under spring rains, and soon large gullies appeared. Within a few weeks the lot was being washed away.

After seeking advice from many sources, Price went to the Hamblen County Soil Conservation District and the Soil Conservation Service for technical help. The SCS district conservationist visited the site and recommended protective vegetation and concrete waterways to carry runoff safely from the lot.

In 6 months, part of the area had been stabilized by sodding, and the rest had been smoothed and seeded.

Price has been an affiliate member of the Hamblen County District for several years. Until his erosion and sediment problems came up, there had been no occasion to ask for help. "I appreciate the help and professional advice I received," said Price.

Price has set an example for

others in commercial, industrial, and urban areas by stopping ugly and expensive erosion. He also has added to the beauty of his property and of the surrounding area. The entire community benefits from this kind of conservation work. ♦

Erosion had been eating away at the parking lot before the steep banks were stabilized and seeded. The asphalt-paved drop chutes and the concrete waterway (above, left and right) carry runoff safely off the lot. (Right) Kentucky 31 fescue and ryegrass keep the soil on the slope and out of sewers, storm drains, and streams.

strip mines that don't stay ugly

By Neal P. McKinstry
District conservationist, SCS
Craig, Colo.

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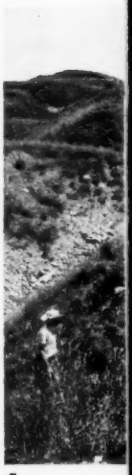

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1. Coal is one of Colorado's natural resources. In northwestern Colorado a good grade of bituminous coal is worth many dollars to the local economy.
2. In many places, large draglines make strip mining the most economical method of recovering coal from depths of up to 90 feet. Unfortunately, good farm or range land is destroyed in the mining operation. Subsurface mining is practiced only where thick veins lie deeply buried.
3. Giant draglines can turn many acres upside down in a year. Their 40-cubic-yard buckets strip away overburden at a fantastic rate.
4. Mining can convert beautiful and productive land into pile after pile of shale and sandstone spoils unfit for any use.
5. Largely due to the efforts of the White-Yampa Watershed Association of Soil Conservation Districts, all major coal companies in Routt County agreed to strike off the peaks of the spoil banks to a minimum width of 15 feet and to revegetate the areas.
6. Some mine operators went further. This $100,000 crawler with dozer is used primarily for smoothing out the spoil piles.
7. This area is well on its way to restoration. When the depressions are completely filled in, most of the seeding can be done with a drill.
8. Grass makes it beautiful. Smooth brome, orchardgrass, intermediate wheatgrass, and alfalfa have successfully reclaimed this area.

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a county in transition

By Glenn B. Anderson
District conservationist, SCS
Fairfax, Va.

In Fairfax County, Va., there was evidence of the haphazard large-scale urbanization that brings along with it destruction of scenic areas, excessive soil loss and sedimentation, runaway storm water, and damage to houses.

To put a stop to this deterioration of the environment, the county adopted a number of ordinances and policies to guide subdivision development. The county also took action to get help in land use planning and in developing conservation programs. In 1965, the County Board of Supervisors and the Northern Virginia Soil and Water Conservation District jointly sponsored an application for a watershed project for Pohick Creek.

The Pohick Creek Watershed Project embraces about 32 square miles of land on the fringe of the Washington, D.C., metropolitan area. The creek has three main branches. The watershed's topography is gently rolling to moderately steep; the elevation ranges from 45 to 460 feet above sea level.

This Public Law 566 project is one of the first in the nation to be planned in a watershed that is expected to be converted entirely from rural to urban use.

This planned conversion is by no means a pipe dream. The construction of public sewers in the Pohick area and the extension of a public water-supply system have been bringing more and more people into the watershed.

The population of the watershed in 1963, when comprehensive planning started, was 5,000. About 15,000 people have moved in since then. By the year 2000, an estimated 161,000 people will be living in several subdivisions around a number of lakes, parks, schools, and shopping centers. At present prices, privately owned real estate with improvements will be valued at $1.5 billion. The investment of public money in community facilities and capital improvements will total $107.4 million.

One objective of the project is to restrict or prevent development of flood plains along major streams, adjacent steep slopes, and areas of unstable soils.

Another objective is to control

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Two views of Lake Braddock (opposite page), the focal point of a 412-acre subdivision in the Pohick Creek watershed. This 22-acre lake receives runoff from the surrounding areas and is used intensively for recreation. (Above) An effort is made to keep the soil smooth and compact during construction. Nevertheless, until the lots are sodded and the streets paved, runoff will carry some soil downhill. (Left) Conservation measures for the Pohick Creek watershed included this basin which traps the sediment that washes down from the construction site.

accelerated erosion and sedimentation on construction sites by requiring developers to plan and apply appropriate conservation measures.

The federal government's input for the construction of eight floodwater-retarding structures and for 6.2 miles of channel-improvement work amounts to about $1 million. In addition, SCS is providing technical help in carrying out the accelerated land-treatment program.

The project sponsors are responsible for getting the land rights, estimated to cost about $1 million, for works of improvement.

Developers are to pay the cost of land-treatment measures for erosion and sediment control. These will cost about $3 million.

The land-treatment and structural measures can reduce sediment delivery into Pohick Creek and the Potomac River by 7.2 million tons in the 100-year life of this project.

Controlling erosion and sediment in urban areas means working primarily with public agencies, contractors, developers, engineers, and planners. The techniques and conservation programs are different from those generally used in agricultural watershed projects.

In the Pohick watershed—

(1) County ordinances and related guidelines and policies were amended to require effective erosion- and sediment-control measures for all future developments.

(2) A combination of land-treatment measures that minimize erosion and sedimentation was worked out, and a handbook of standards and specifications for a variety of conservation practices and measures was prepared.

(3) A continuous program of training, education, and information has been pursued to acquaint representatives of public agencies, developers, engineers, planners, and contractors with principles and techniques of conservation land treatment.

All rezoning applications in the Pohick watershed are referred to the Soil Conservation Service, through the Northern Virginia District, for evaluation before any action is taken by the county.

After rezoning action has been taken, the preliminary subdivision plans outlining the developer's erosion- and sediment-control measures are referred, in the same way, for study and recommendations.

SCS gives technical help to agencies of the county, private developers, groups, and individuals on all phases of the conservation program. On request, SCS gives onsite technical advice on applying conservation practices called for in the approved plan.

The Pohick example shows how a watershed project can complement an overall resource-development program and how conservation practices are made a working part of subdivision plans. ♦

loblolly pines stand tall

Ten young men from Columbia County, Ga., lost their lives in World War II, but they have been remembered by the land from which they came.

In 1944, G. B. Lambkin, supervisor of the Little River Soil Conservation District, suggested a memorial for these men, and Jack Eubank, a district member, thought of loblolly pine trees. Families or friends donated an acre of land for each of the men. In 1945 the Little River District supplied the trees.

One of the tallest memorials is about 4 miles from Appling. There a grove of 60-foot loblolly pines surrounds the grave of Charles Snellings. About 1,000 trees were planted on this site, and 95 percent have survived.

Most of the men's families have placed stone plaques on the graves. Each plaque has engraved on it the young man's name and company and "Pines are a living memorial."

J. C. Butler, SCS district conservationist, often checks the pine tree groves although the families of the men maintain them. Most of the trees have lived longer than the men for whom they stand tall.—GRACE KRUMWIEDE, *Information Division, SCS, Washington, D.C.* ♦

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sharing is half the fun

What began as a place for relaxation for three men and their families has evolved into a recreation complex that is available to about a quarter of a million people.

Because of inadequate facilities for outdoor recreation in upper east Tennessee, Albert Buchanan, Ogden Shook, and Clarence Carrier bought 85 acres of land to develop for their own recreation needs. But they didn't stop there; they kept on buying more and more adjoining land until they had 295 acres.

It was at this point that the three landowners decided to expand their facilities so that others might use them as well.

Buchanan asked the Sullivan County Soil Conservation District and the Soil Conservation Service for technical help in determining the feasibility of building a lake. The district conservationist, after making onsite soil investigations, prepared a design for a dam 20 feet high that could impound a 6-acre lake.

The recreation facilities at Underwood Park are accessible to a quarter of a million people in upper east Tennessee.

SCS helped develop a conservation plan for the entire 295 acres. The plan included provisions for woodland improvement and wildlife development. Roads were located where they could serve as firelanes to protect the wooded areas.

Following SCS specifications, the partners installed the principal spillway for the lake, built 3 miles of roads to completely encircle the lake, and beautified the shoreline.

They completed two sand beaches that accommodate about 700 people, installed diving boards and floats, and opened the area to the public (after the State Health Department gave its approval). Lifeguards are on duty at all times.

The lake has been stocked with bass and bluegill. Ten boats, complete with life-saving equipment, have been added for sport fishing. A modern bathhouse and concession stand have been built to accommodate swimmers.

Picnickers have access to 25 tables in a shaded area along a clear mountain stream. The picnic area is complete with grills and waste cans.

Cabins, equipped with the latest conveniences, have been built on a wooded hill overlooking the lake. In an area developed for about 50 campsites, there are tables and grills, a central bathhouse, and parking for about 300 cars.

And the newest attraction is a miniature golf course.

"About a quarter of a million people live within 25 miles of our facilities," said Carrier. "We want to preserve the natural beauty of the area and at the same time give the people the kind of recreation they want."

The entire area is in a setting of beautiful wooded hills and valleys. It is framed by the Holston Mountains, which are part of the Appalachian Range. The hardwoods and evergreens and the many flowering plants natural to the Appalachians make this area ideal for nature study as well as for recreation.—H. C. GREEN, *district conservationist, SCS, Blountville, Tenn.* ◆

the land from which a church grew

Who ever heard of a church winning a "tree farm" award? People around Ringgold, La., have.

Springhill Baptist Church, near Ringgold, is a winner of the Louisiana Forestry Association's Tree Farm Award. The church owns 40 acres of trees in its backyard—trees that have helped pay church bills for nearly 100 years, according to Everette Geis, the pastor.

Springhill Baptist Church was organized in 1870. The first church was built on a rocky, hilly site—part of 40 acres given to the church by two members of the congregation, Cul Conly and Everette Hamner.

Church members cut trees from part of the land to build that first church, a log cabin that was used until 1880.

By 1928 the old church was badly in need of repair. Horace Boise, a deacon of the church and a member for more than 60 years, remembers that $1,000 was borrowed that year for repairs.

"Several church members pledged half a bale of cotton to pay off the loan," Boise recalls. "When members pledged in those days, it wasn't money but part of a crop. If the crop was bad so was church financing. That's the way the preacher was paid too."

"The first year we paid $600 on that loan," said Boise, "but the next year was 1929, and cotton went down to $0.05 a pound. We only got $125 for 5 bales that year. For several years times were hard and money was short."

By 1945, the 40 acres had grown into a pretty good forest. An offer of $750 was made for the timber. And that was fortunate because Springhill had to build a new church, and money was still short.

Boise said that they wanted to cut the trees right, so the church signed an agreement with the Saline Soil and Water Conservation District and asked the Soil Conservation Service to help plan a conservation program for the woodland.

The timber was marked for cutting in late 1945 under the guidance of Hal Townsend, then SCS woodland conservationist and now professor of forestry at Northwestern State University. Only pulpwood and poles were cut that year because of a labor shortage. Saw timber was cut in 1948. This first cutting netted the church $1,270. A new cinderblock church was built in 1948, and the timber money was a start in paying for the building.

After the timber was cut, church members culled the woodland so little trees could grow better.

Boise was put in charge of managing the woodland. "We wanted to follow a plan that would not only bring income from the trees but also improve the woodland year after year," he said.

In 1954, the timber was marked and cut again, this time with help from Ford Fallin, then SCS woodland conservationist at Ruston and now in the SCS state office in Alexandria. This cutting brought more than $1,400, which was used to pay bills.

The woodland was harvested again in 1963 and in 1968; the 1968 sales amounted to nearly $2,000.

Bill Conly, a member of the church and a forester with the Louisiana Forestry Commission, is now looking after the timber. He figures the timber's worth at about $150 an acre.

Springhill Church has about 300 members, and the membership is increasing. The annual budget is about $22,000, and there is a brick home for the pastor and his family. About half of the members still farm the land, but they don't plant cotton. Money comes from grass and trees.—GENE WARREN, *public information specialist, SCS, Alexandria, La.* ♦

Pentagon promotes conservation

Every year one of the nation's largest landowners gives himself an award for conservation excellence.

Who's the landowner?—the U.S. Department of Defense, which manages 20 million acres on 243 bases all over the United States. Under DOD's Natural Resources Program, each Army, Navy, and Air Force base is a cooperator with its local conservation district and carries out a conservation plan with technical aid from the Soil Conservation Service and other agencies.

The Secretary of Defense Conservation Award, presented yearly since 1962, goes to the base showing the most progress in these areas: (1) Fish and wildlife; (2) forest management; (3) soil and water conservation; (4) pollution abatement; (5) outdoor recreation; (6) conservation education and club activities; (7) community relations and public use of base facilities; (8) beautification; and (9) nature trails and nature areas.

A three-man committee drawn from the Departments of Defense, Interior, and Agriculture selects the top base from among six finalists—two from each service. Darnell M. Whitt, director of the Plant Sciences Division, SCS, Washington, D.C., represented the Secretary of Agriculture on the committee in 1970 and will do so again in 1971.

The six finalists for this year have already been selected. The award committee is scheduled to visit the six installations beginning June 1. Lloyd Partain, assistant to the SCS Administrator, was one of the judges that selected the Navy's two finalists.

Last year's winner was Camp Pickett of Blackstone, Va. Finishing in a tie for second were the U.S. Air Force Academy, Colorado Springs, Colo., and the Naval Ammunition Depot, McAlester, Okla. The other finalists were Fort Jackson, Columbia, S.C.; Naval Air Station, Patuxent River, Md.; and Pease Air Force Base, N.H.

At Camp Pickett, 1,700 acres that had been cleared for tank maneuvers were planted to food and cover crops to encourage wildlife and prevent soil erosion. Camp Pickett soldiers cleared 800 acres of old fields and woodlands to improve training sites and aid wildlife and reforestation programs. They seeded roadsides and planted shrubs and trees to beautify the post.

Defense of the United States may be DOD's first aim, but defense of its natural resources is high on the list as well.—DANIEL A. PEED, *information division, SCS, Washington, D.C.* ♦

Secretary of Defense Melvin R. Laird presenting the Secretary of Defense Conservation Award to Col. W. C. McMullin, the commanding officer of the winning base, Camp Pickett, Va. Darnell M. Whitt (left), director of SCS Plant Sciences Division, was a member of the selection panel.

Review

Benefits and Burdens of Rural Development: Some Public Policy Viewpoints. EDITED BY EARL O. HEDDY. *1970. Iowa State University Press. 311 pp. $5.95.*

This book has some very useful historical figures and suggestions about the problems of supply control and farm prices with special reference to carrying out federal legislation dealing with price support and supplies of certain farm products. The book also presents some current suggestions about the influences of the past programs and related policies on commercial farming.

Yet, on the specific subject of rural development, there is considerable semantic confusion because in most places the words "farming," "agriculture," and "rural" are used almost interchangeably. The arguments are difficult to follow. Years ago "farming" and "agriculture" were nearly synonymous, but that time is long, long past.

Certainly farm labor has been declining. Since the industrial revolution came to agriculture, farm labor has moved to the towns and cities. The farmer probably uses about as much labor as he ever did, but now he uses it in the form of machines, chemicals, oil, electric power, and many other inputs. Although good figures are hard to come by, probably the labor on farms amounts to about 5 percent of the total labor force. Doubtless the labor force in all agriculture is of the order of 25 to 35 percent of the total national labor force.

Several other important sectors of agriculture in addition to farming are highly important. One includes the manufacture of chemicals, machines, oil, electricity, and all the other inputs used on farms. Then too, nearly all of the important processing of farm products has also moved to towns and cities. The enormous reductions in waste of farm products by modern marketing and processing is one of the most dramatic achievements of American agriculture. In one chapter of this book these sectors are referred to as "agribusiness."

Besides these industrial components, agriculture includes important financial, educational, and research services in both the public and the private sectors.

Further, this book fails to give a glimpse of the enormous variety of the American farm production. Discussion is limited to standard Midwest crops and animals and cotton. Both tables and discussions fail to include any horticultural crops, rice, sugar, forest products, and the many other specialty crops. Nor is there any recognition of the recent increase in horse breeding.

In places too, the book relates the acreage classes of farms to various national summaries and to one another without realizing the enormous ranges of soil and climate that determine their basic productivity.

The area discussions do not bring out the vital functional relationships between rural towns and farming. Of course, the little villages lacking transport began declining with the general use of automobiles during World War I. But those country towns with enlightened leaders and with good transport, including an airport, have been expanding. Some of the later chapters give some hints of the great importance of the distribution of housing and population to have the benefits of good economic, physical, biological, and cultural environments through town-and-country planning. Once this type of town development, based on farming and forestry resources, gets going, with the essential infrastructure, then other industries can be attracted to these smaller towns that have much better environments than the old overcrowded cities.

Accelerated progress in this vital area of town-and-country planning is the key to so-called rural development. Further, the principles apply broadly in other countries. Through town-and-country planning, the redundant farm labor in newly developing farm areas can be employed in the industrial sectors of agriculture itself.—CHARLES E. KELLOGG, *former deputy administrator for soil survey, SCS, Washington, D.C.*

Highway Materials. BY ROBERT D. KREBS AND RICHARD D. WALKER. *1971. McGraw-Hill Book Company, New York. 406 pp., illus. $13.95.*

This text has been prepared for the 2-year college level but is excellent for use in short courses and for the review of aspects of highway materials by practicing engineers and technicians. For the uninitiated it should be augmented with lectures and laboratory work.

The authors discuss the principles and conditions that affect the selection and performance of highway materials and give a thorough treatment of the materials themselves and their characteristics.

The four principal materials—soil aggregates, portland cement, concrete, and bituminous mixtures—are covered. The discussion on soils includes the fundamental concepts of soil, air, and water, classification, ground water and drainage, frost action, compaction, and stabilization.

Current practice and tests for each material are presented and for the reader who has greater interest the list of references is comprehensive.

This book is very well prepared and provides an excellent text for a 2-year technician's course and for engineering students in general. I expect it to be of particular value as a refresher for practicing engineers. The discussion is directed to highway construction but is also applicable to other engineering works.—PAUL E. NYLANDER, *Engineering Division, SCS, Washington, D.C.*

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New publications

Norman Borlaug—Hunger Fighter. By Don Paarlberg. *1970. USDA PA 969. 20 pp., illus.* A story of wheat, a story of a man who fights the world's hunger and seems to be winning. The story begins in Mexico in 1944 when Norman Borlaug went to that country for the Rockefeller Foundation to improve its agriculture. The breakthrough of the green revolution—a high-producing wheat—came in the hungry part of the world, not in those countries already surfeited with agricultural output.

Basic Statistics—National Inventory of Soil and Water Conservation Needs, 1967. *1967. USDA Statistical Bull. 461. 211 pp. $1.75.* Presents the data of the updated National Inventory of Soil and Water Conservation Needs as of base year 1967. The first national inventory had 1958 as its base year, and the data were published in *Basic Statistics of the National Inventory of Soil and Water Conservation Needs,* USDA Statistical Bulletin 317, in 1962.

Food Consumption, Prices and Expenditures, Supplement for 1969. *1971. USDA Agricultural Economic Rpt. 138. 83 pp., illus.* Revises and updates through 1969 the statistical information contained in *Food Consumption, Prices, and Expenditures,* issued July 1969.

National Forest System. *1970. USDA Forest Service File 1380 (5400). 20 pp., illus.* Lists 154 National Forests, 29 Purchase Units, 19 National Grasslands, 20 Land Utilization Projects, 24 Research and Experimental Areas, and 21 other areas in the United States and Puerto Rico as of June 30, 1970. A map of the National Forest System and related data appear in the publication.

Soil surveys

Eddy Area, New Mexico. By Jack C. Chugg, George W. Anderson, Donald L. King, and LaVaughn H. Jones. *1971. 82 pp., illus.; maps 3.17 inches to the mile (1:20,000).*

Erie County, Ohio. By C. E. Redmond, T. J. F. Hole, C. H. Innis, and M. Wachtman. *1971. 166 pp., illus.; maps 4 inches to the mile (1:15,840).*

Broome County, New York. By Edward R. Giddings, Donald F. Flora, and Gerald W. Olson. *1971. 95 pp., illus.; maps 4 inches to the mile (1:15,840).*

Nelson County, Kentucky. By Fred S. Arms, James P. Fehr, David T. Carroll, Byron L. Wilson, Herman P. McDonald, and James C. Ross. *1971. 106 pp., illus.; maps 4 inches to the mile (1:15,840).*

Bent County, Colorado. By Rodney E. Preator, Ronald E. Moreland, Stanley O. Woodyard, and M. Bruce McCullough. *1971. 72 pp., illus.; maps 4 inches to the mile (1:15,840).*

Champaign County, Ohio. By Alexander Ritchie, Jr., Kenneth Powell, and V. I. Siegenthaler. *1971. 82 pp., illus.; maps 4 inches to the mile (1:15,840).*

Walworth County, Wisconsin. By Orville L. Haszel. *1971. 107 pp., illus.; maps 4 inches to the mile (1:15,840).* Fieldwork by John M. Cain, Donald W. Owen, Donald C. Kurer, Joseph A. Steingraeber, and Orville L. Haszel.

Meetings

The American Society of Agricultural Engineers will hold its 64th annual meeting June 27-30 in Pullman, Wash., presenting "Solving Environmental Quality Problems in Agriculture" as the theme.

The American Water Works Association will hold its 91st annual conference June 13-18, in Denver, Colo. "Action Now" . . . on improving the quality and quantity of public water supply and effectively publicizing the important job being done by the water-supply industry . . . will be the theme of the conference.

The annual meeting of the **National Education Association** will be held June 27-July 2 in Detroit, Mich.

"Prelude and Current Status of NEA Concern for and Involvement in Environmental Education" will be highlighted during the meeting. In a question and answer period, "One Way to Go—NEA Project on Environmental Education" will be discussed.

"Social and Economic Aspects of Water Resource Development" will be the theme of a research conference to be held June 21-23 in Ithaca, N.Y.

This conference is sponsored by the **American Water Resources Association and the Cornell University Water Resources and Marine Sciences Center.**

The 88th annual convention of the **American Seed Trade Association** will be held June 27-30 in St. Louis, Mo.

Dates and places

June

6-9, National Watershed Congress, Tampa, Florida.
6-10, General Federation of Women's Clubs, Pittsburgh, Pa.
7-9, American Association for Conservation Information, Springfield, Mo.
8-9, National Conference of Federal and State Water Officials, Des Moines, Iowa.
13-18, American Water Works Association, Denver, Colo.
14-18, American Water Resources Association and University of Wisconsin-Milwaukee Research Conference on Planning for Water Quality and Standards, Milwaukee, Wis.
19-25, Outdoor Writers Association of America, Inc., Pensacola, Fla.
20-24, American Society of Landscape Architects, Portland, Oreg.
21-23, American Water Resources Association and Cornell University, Symposium on Social and Economic Aspects of Water Resource Development, Ithaca, N.Y.
26-30, Air Pollution Control Association, Atlantic City, N.J.
27-30, American Seed Trade Association, St. Louis, Mo.
27-30, American Society of Agricultural Engineers, Pullman, Wash.
27-July 2, National Education Association, Detroit, Mich.
27-July 3, National Environmental Health Association, Portland, Oreg.

July

5-7, Izaak Walton League of America, Long Beach, Calif.
12-17, International Symposium on Useful Wildlife Shrubs, Logan, Utah.
17-21, American Association of Nurserymen, Dallas, Texas.
18-21, National Association of Counties Research Foundation, Milwaukee, Wis.
25-29, National Association of Business and Professional Women, Cleveland, Ohio.
29-31, Great Plains Conservation Council, Albuquerque, N. Mex. ♦

Recon . . .

'Round and 'round they go. "Recycling is the direction we should go. Recycle waste and recycle what we use. Our raw materials are not inexhaustible, nor are air and water . . ."—WILLIAM RUCKELSHAUS, *director of the Environmental Protection Agency.*

Ritchie County, W. Va., has turned gravel playgrounds (a source of minor injuries to children) at its schools into outdoor classrooms for conservation learning.

School authorities found help readily available from many individuals and groups: SCS planned trails and study areas; a landscape architect from West Virginia University drew up beautification plans; the Parent-Teacher Association took on the job of maintenance.

All public schools in the county now have outdoor laboratories, which range from 1.6 to 400 acres, and 1,600 children use them for conservation education.

As part of Project SOAR (Save Our American Resources), a national conservation service project during 1971, the Boy Scouts of America are highlighting the need for litter cleanup, litter prevention, and recycling in a nationwide activity.

Scouting Keep America Beautiful Day on June 5, 1971, was aimed at both an immediately cleaner environment and litter prevention in the future.

An important objective of Scouting Keep America Beautiful Day was to get across that recycling is an answer to the solid-waste problem. Recycling can solve two problems at one time. First, it gets rid of the trash that may become litter. Second, it reduces the drain on natural resources needed to make the product.

Simpson Jefferson, sixth grade teacher at Madison Elementary School, Washington, D.C., after attending a teachers' class in ecology sponsored by the National Park Service, was determined to improve the environment around his school.

Assisted at first by his sixth-graders and later by the entire student body, Jefferson turned an eroded, litter-strewn embankment at the end of the school playground into an urban environmental study area.

The area is small (70 by 20 ft.), but what Jefferson and the students have done to it has had a large impact on the neighborhood. This effort has instilled in the neighborhood an awareness of environment and how it can be improved. Residents have joined students in making the neighborhood a more pleasant place in which to live.

The Pennsylvania State University College of Agriculture has added Environmental Resource Management (ERM) as a 4-year, undergraduate major. Courses in the biological, physical, and social sciences are combined with technical courses in the College of Agriculture. Ten new courses worked out for this ERM major include: Pollution of environmental systems; ecology of plant production; soil resources and land use; rural water-resource management; and legal aspects of resource management.

The Virgin Islands Legislature has passed and the Governor has signed an Environmental Protection Act. Under this act, development plans must be submitted to the local soil conservation district for review and approval.

Montgomery County, Pa., found 48 abandoned quarries that could be used for sanitary landfills. The old quarries have a combined surface area of 377 acres and a capacity of 20 million tons of solid waste. Considerable work was needed to meet Pennsylvania Department of Health standards—and to get a permit to operate—but the project is underway and should be adequate to serve the entire county for 20 years.

The North Dade Journal of North Miami, Fla., startled its readers when it published an appeal on its front page for dirty pictures. The journal paid $5 for a picture published on the inside of the paper and $10 for a "front page" picture. Pictures were to show debris or pollution.

The newspaper identified the area shown in each picture and gave the source of the pollution, if known. This gave readers and the owners of the polluted areas a chance to take action.

In a followup report, the newspaper indicated that a place had been cleaned up or that conditions were being ignored and getting worse.

New towns vs. urban sprawl. The Southeastern Wisconsin Regional Planning Commission figures that scattered development for 15,000 people over a 42-square-mile area needs 23 miles of high-standard roads, 21 miles of sanitary sewers, and 9 miles of storm drains. A planned new town for the same number of people needs 74 percent fewer miles of high-standard roads, 67 percent fewer miles of storm drains, far less sewage construction, and a third less costly elementary school system.

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From the Administrator:

More to do about wastes

If all of America's daily wastes were placed end to end, they would reek to high heaven.

This approximation suggests the gaps that remain in technical knowledge about disposing of or recycling the waste products of American society.

In the agricultural sector, important gains have been made in research and on the land in lessening pollution problems caused by sedimentation, use of agricultural chemicals, animal wastes, municipal wastes, and salinity.

SCS conservationists are helping local conservation districts deal with a broadening range of pollution-abatement work:

—Erosion control on farmland and along roadsides and streambanks to keep sediment, fertilizers, and chemicals from moving into waterways.

—Treating animal wastes on the farm through use of lagoons, diversion structures, holding ponds, and irrigation systems for spreading wastes on pastureland, and other methods.

—Locating good sites for disposing of solid wastes from farm and town, planning erosion control and water-disposal methods to protect the sites, and selecting plants to screen or cover the sites.

—Controlling soil and water and selecting plant materials to restore surface-mined land and keep acid and sediment from polluting waterways.

—Devising tailwater recovery systems to keep polluted irrigation water from fouling streams

—Locating soils and selecting crops that can assimilate sludge from municipal waste treatment and processing plants

—And many other kinds of action.

Working in these areas of pollution abatement requires that SCS people continuously educate themselves in techniques to do a better job. And on the other side of the coin, experience of SCS people in working with landowners and communities is helpful in determining research needs and other sources of needed help.

Serving both these aims is the purpose of a joint ARS-SCS Pollution Abatement Workshop being held this month in Oxford, Miss. The 3-day session, first of its kind between our two agencies, will help us exchange information about research results and field experience and improve the capability of both agencies.

SCS also is conducting a series of workshops for its employees on our experience and responsibilities in the pollution-abatement field.

Our objective is to help recycle as much of America's waste products as possible and to dispose of the rest by the safest methods practicable. More and more communities, having fouled their air and water, are looking to the soil as a "sink" or final destination for wastes. And knowledge of the soil—its capabilities and its limitations—is the province of SCS. Assisting landowners in the protection of soil and water resources is our responsibility.

We will adapt and apply our knowledge to the urgent need for pollution abatement as we have to all other challenges.

Kenneth E. Grant

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keep it clean

In the swine business, it's difficult to keep your property clean and attractive and free of offensive odors —unless you have a lagoon for the disposal of animal wastes.

Mr. and Mrs. Luther Scales of Coweta, Okla., have the first disposal lagoon in Oklahoma built with technical help from SCS and cost-sharing under the Rural Environmental Assistance Program.

The lagoon is designed to take care of the wastes of 100 mature animals. It is 8 feet deep; the bottom measures 20 x 60 feet.

This waste-disposal lagoon is on its way to full efficiency. The pit will be filled with water after the area is sodded and fenced.

The Scales say that, even though their lagoon is new and not yet operating at full efficiency, offensive odors on their feedlots have been markedly reduced. And having the lagoon has reduced the time required to clean the barns and feedlots.

The swine enterprise on the Scales' farm has been improved and refined considerably over the years. Better feeding and better breeding were two changes that were made early. Scales stated that after a few years of attempting to expand his hog operation it became clear that he needed to shift his efforts toward modernization and automation. Late in 1962, with financial help from the Farmers Home Administration, Scales built a modern farrowing house and a combination loafing shelter and concrete feeding platform.

By extending waterlines from the well to the hog barns, Scales was able to install automatic watering devices. Automatic feeders also are standard equipment now as are heat lamps and farrowing crates. This modern equipment has enabled the Scales family to more than double their hog production without increasing labor requirements.—DAN ROBERTSON, *district conservationist, SCS, Wagoner, Okla.* ♦

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